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THE BRYOLOGIST

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LICHEN NOTES No. 10.

Cladoñia gracilis a, verticillata f. symphycarpia Tuck, and Cladonia symphycarpa Fr., a present view of their identity.

G. K. MERRILL.

Tuckerman in his Synopsis writes of the first plant of our caption, as known only from the coast of Massachusetts. Henry Willey records it in his New Bedford list with the note "very rare," and in Dr. Fink's Upper Mississippi Valley list it is reported from Minnesota. Included in no other American catalogue so far as examined, the plant might be considered as of rare occurrence or else difficult of recognition. As a matter of fact the form is far from uncommon, and assuming that it has been as copiously collected in the past as now, the name or names under which it may sojourn in our American herbaria surely offers a matter for speculative interest. Tuckerman's reason for affiliating the form with *Cl. gracilis verticillata* is not at all obvious to one well acquainted with the characteristics of both. It is possible that the well developed primary thallus of f. *symphycarpia* suggested affinity through the f. *cervicornis*, or in another way the connective hint may have been furnished by the rarely observed tendency of a. *verticillata* to develope with obliterated scyphi. This condition however is too inconstant to be considered other than a mere modification, and while symphycarpeous states of Cladonia forms are often to be noted, the writer has yet to observe any transitional conditions that would serve to conclusively ally f. *symphycarpia* with any known Cladonia species. The podetia of f. *symphycarpia* are distinctly club shaped, and with this fact in view, it is remarkable that Tuckerman should have conceived of a relationship for the form with a. *verticillata*, a scyphiferous type, and at the same time deny to *C. symphycarpa* Fr. a plant of much similarity, a like affinity (so finally assumed by Fries) to *C. pyxidata*. There are three reasons for the almost total failure of American lichenists to recognize f. *symphycarpia*. The first of these is the ineffective description of the plant offered by Tuckerman in the Synopsis; the second is the reallv excusable error that our students have

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EXPLANATION OF THE PLATE IV.

No. 1. *Cladonia subcariosa* Nyl. (C. *gracilis* a. *verticillata* f. *symphycarpia* Tuck.) the first collected specimen designated by Tuckerman's name.

No. 2. *Cladonia alpicola* (Flot.) Wain. m. *Karelica* Wain. from Knox Co., Maine.

No. 3. Another example of *Cladonia alpicola Karelica* from Central Village, Conn.

No. 4. *Cladonia polycarpia* Merrill (*Cl. symphycarpa* Fr. "macrophylline state"), from the Tuckerman collection.

No. 5. *Cladonia polycarpia* from Maryland.

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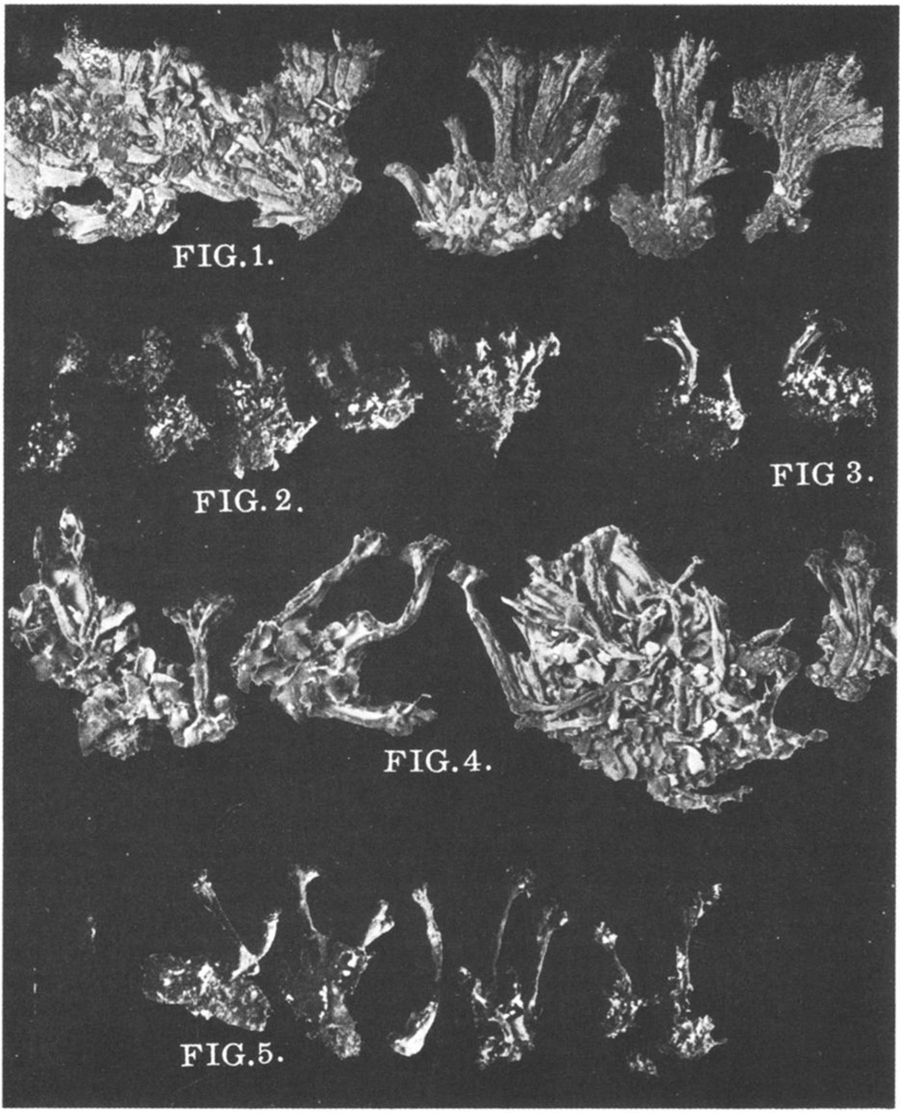

PLATE IV. Cladonia Species.

fallen into of idenifying the plant with *C. symphycarpa* Fr.; and the third is our neglect of chemical criteria as a means of determining species. On the loose description given by Tuckerman of *C. symphycarpa* Fr. rests the burden of error in greater part. While the two forms are unlike viewed with the careful scrutiny which comprehends all their points of difference, if the less obvious features of diversity are ignored or overlooked, the description answers satisfactorily for both. The result is that f. *symphycarpia* has been commonly recognized as *C. symphycarpa* Fr. Wainio seems to have been first to point out the true status of f. *symphycarpia* Tuck. by calling attention to the fact that No. 116 of Tuckerman's exsiccati as examined in some European copy, afforded the characteristic reaction with KHO of *C. subcariosa* Nyl. The earliest collected example of f. *symphycarpia* in his herbarium as tested by Tuckerman himself affords similar testimony, and personal examination by the writer of the specimens there preserved confirms Wainio's opinion of its identity. As *C. subcariosa* the plant will now be considered. Few of the Cladoniaea respond more satisfactorily to the test with KHO than this species. The reaction is K+at length orange-red and even crimson, If our American students desire to ascertain how many examples of *C. subcariosa* Nyl. (nee f. *symphycarpia* Tuck.) are contained among their specimens marked as *C. symphycarpa* Fr., the test will demonstrate most satisfactorily. To the distribution given by Dr. Fink in BRYOLOGIST IX, No. 4 for *C. subcariosa* is added: 1. Rock Creek, D C., T. A. Williams; 2, Putnam Co., Ind., L. M. Underwood; 3. Thomasville, Ga., Mrs. Taylor; 4. Waltham, Mass., W. Gerritson; 5. Sudbury, Mass., Miss C. M. Carr; 6. Morgantown, W. Va., J. L. Sheldon; 7. Catonville, and 8, Avalon, Md., C. C. Plitt; 9. Island of Jamaica, and 10, Wellesley, Mass., Miss C. E Cummings; 11. Camden, Maine, Miss A. L. Crockett; 12. Takoma Park, D. C., Miss M. E. Williams; 13, Central Village, Conn., J. L. Sheldon; 14. McCall's Ferry, Pa., A. A. Heller. Of these No. 1 was the only specimen rightly identified when coming to the writer's hands. No. 2 bore the name of *C. symphycarpa* Fr., likewise No. 10, while No. 11 was called its var. *epiphylla*. No. 14 was labelled *C. gracilis*. It may be noted that No. 178 Li. Bo. Am. marked *C. symphycarpa* Fr. is No. 12 of the foregoing. It is not known who identified No. 12 for it was issued under the joint names of Williams, Seymour, and Miss Cummings, but No. 10 collected in 1884 was sent out in the early "New England Lichens" series of the latter. This last originally marked *C. cariosa* (Ach.) Spreng. is revised in my copy in Miss Cummings' handwriting and now reads *C. symphycarpa* Fr. Miss Cummings enjoyed an intimate acquaintance with the Tuckerman collection, and it is difficult not to believe that the specimens marked and published as *C. symphycarpa* or at least some of them were compared with the Tuckerman examples. It this was done and carefully, then those of our lichenists who have not been in touch with authentic material but have determined their symphycarpeous Cladonia specimens from Tuckerman's description alone, scarcely need an apologist. A curious fact may be mentioned here that perhaps had some weight in the many erroneous reference of f. *symphycarpia*. According to the

"Synopsis" and the various lists examined, *C. symphycarpa* Fr. is a widely distributed plant and f. *symphycarpia* uncommon. The collector would with knowledge of this reputed sharp contrast in distribution be inclined to call his symphycarpeous plant an example of the commoner species. But on the testimony of the writer's herbarium it is found that contrary to Tuckerman's experience and that of some others, *C. subcariosa* (f. *symphycarpia*) is comparatively common and widely diffused, while the collection contains no specimen marked by others as *C. symphycarpa* not referable elsewhere, but two examples of that species as elucidated by Wainio, and only two attributable to it in a restricted Tuckermanian sense.

A review of the European synonymy of *C. symphycarpa* Fr. scarcely aids to an understanding of the American plant, being curiously contradictory. To summarize the various opinions: Th. Fries makes *C. pyxidata* var. *symphycarpa* (Ach.) Nyl. a synonym of *C. symphycarpa* Fr. Coemans states that *C. symphycarpa* Ach. is scarcely to be applied to anything except a condition of *C. cariosa*. Th. Fries affirms that the Acharian species is a composite, one of the elements being *C. cariosa*. Wainio's view is that the species belongs with *C. cariosa corticata* Wain., but he asserts that *C. symphycarpia* Ach. as interpreted by Floerke in herb. and illustrated in Arnolds Icones No. 1485, to be *C. alpicola* v. *Karelica* Wain., and *C. symphycarpa* Fr. as published in the Friesian exsiccati is given a similar identity. If Wainio's reference is warranted and it is desired to know just what constitutes *C. symphycarpa* Fr., through the lack of any adequate diagnosis his description in the Monograph must be accepted. The following is an abbreviated rendering:

C. alpicola (Flot.) Wain. var. *Karelica* Wain.

Thallus persistent or subpersistent, of scattered or crowded medium sized (2–4 x 1–3 mm.) olivaceous squamules, the margins irregularly incised or incised-crenate; podetia 4–10 mm. in height, aggregated or solitary, suberect, ascyphiferous, subcylindrical or club-shaped, simple or sparsely furcate-divided, laterally entire or at length slightly fissured or sulcate, cortex sub-continuous or partly or wholly verrucose-areolate, the areola contiguous, esorediate and esquamulose, opaque or faintly shining, olivaceo-glaucescent or olivaceo-fuscescent; apothecia terminal, medium or large, confluent or conglomerate, convex immarginate and brown. KHO—

A comparison of the foregoing description with that of Tuckerman's Synopsis for *C. symphycarpa* Fr. will show very clearly, that if Tuckerman had in mind the plant of Wainio, he diagnosed it most imperfectly. Indeed it seems certain that his conception of *C. symphycarpa* comprehended a greater degree of variability for the species than is conceded by others, or else granted relationship to it forms of much unlikeness, One of the numbers in the plate accompanying this note illustrates what Tuckerman calls the "macrophylline state" of *C. symphycarpa* and portrays a plant differing in many particulars from *C. alpicola Karelica*. The earliest collected specimens of *C. symphycarpa* contained in the Tuckerman herbarium is credited to Ravenel, Santee Canal, S. C., 1864, The reaction for this specimen (and by the way it belongs with the "macrophylline" condition), as recorded by Tuckerman on the mount is "K viridescens." Another example from Beaufort, S. C., J. H. Mellichamp, 1868, (the subject of our illustration) affords "K. virescit dein fusca." From either of these specimens and particularly the Beaufort one, no reason is found to separate plants received from Prof. H. A. Green, of Tryon, N. C., and Mr. C. C. Plitt, of Baltimore, Md. Careful examination of this so-called state of *C. symphycarpa* and comparison with examples of *C. alpicola Karelica*, and *C. subcariosa* leads the writer to a conviction of its specific distinctness. In general configuration and habit it is much nearer *C. subcariosa* than *C. alpicola Karelica*, but it may be easily distinguished from the former by a difference in reaction and of the cortical characters, and from the latter by dissimilarity in stature and the dimensions of the thalline squamules. The following is a description of the plant, for which the new name is proposed;

Cladonia polycarpia n. sp.

Thallus persistent, of contiguous or dispersed medium or large (-15mm.) rounded irregular or oblong greenish-glaucescent squamules, the margins incised-lobulate or crenate or irregularly sinuous; podetia -25mm. in height, aggregated or solitory, erect or decurved, the younger conditions club-shaped subcylindrical and terminated by a single apothecia, older states cylindrical or compressed, with abrupt dilated short-divided summits, an apothecia solitary on each branchlet, or when the divisions are not apparent the apothecia confluent, the podetia laterally entire or fissured, cortex sub-continuous or areolate, the areola contiguous or discrete or more or less confusedly rugulose, esorediate but rarely and sparsely sub-squamulose, opaque, greenish-glaucescent; apothecia yellowish-flesh-colored, rufescent, fuscous or dark brown. KHO—

Taken in connection with the description of *C. subcariosa* given by Dr. Fink in BRYOLOGIST IX, No. 4, the definitions herein given of *C. alpicola Karelica* and *C. polycarpia* will furnish a satisfactory guide to any enquirer into the *C. symphycarpa* muddle. With regard to *C. alpicola Karelica* Wain. in point of place in our flora nothing definite can be stated. It is cited in many local lists under its synonym of *C. symphycarpa* Fr. but it is manifestly impossible to ascertain whether the short, or the "macrophylline" state of Tuckerman's diagnosis is understood. In the writer's opinion the plant mentioned in Dr. Fink's paper, BRYOLOGIST IX, No. 2, under the name of *C. cariosa corticata* Wain. collected in Knox Co., Maine, belongs with the species. It is well comparable with the description, the reaction is unlike that of *C. cariosa* being KHO—, while in stature and habit it strongly resembles No. 1485 of Arnold's Icones, likewise KHO—, according to that author. The writer is also in receipt of a similar plant from Central Village, Conn. Collected by J. L. Sheldon, that is similarly referred.

Rockland, Maine.